

## Chapter 6 RELATED PROJECTS

### RELATED WATER MANAGEMENT PROJECTS

**Table 5** identifies additional projects, which are proposed or are already underway, and are being supported by the Lower East Coast Regional Water Supply Plan (LECRWSP), other South Florida Water Management District (SFWMD) planning efforts or local government plans. Regional Reuse of Reclaimed Water and Development of Minimum Flows and Levels (MFLs) are two examples of projects that were identified in LECRWSP recommendations. These projects, in general, were not considered in the planning or modeling efforts for the Northern Palm Beach Comprehensive Water Management Plan (NPBCCWMP) because they were in the early planning stages and/or their effects could not be quantified at the time.

**Table 5.** Related Projects in the Planning Area.

Project	Year Initiated	Estimated Costs (\$ Millions)				Year Finished	Partners (b)
		Total	Local (a)	FY 02	FY 03-05		
Minimum Flow and Level Rule Development	2000	N/A				2002	SFWMD
Northern Palm Beach County Reclaimed Water Master Plan Master Plan/Feasibility Design/Construction	2001 2002 (h)	\$.14 \$16	\$.14 \$8	\$.14 \$1.5 (e)	\$8	2002 2009	ECR, Jupiter, ENCON, Martin County, SMWU, WCI, Cogentrix
L-8 General Re-Evaluation Report Phase I (Plan Formulation) Phase II (Initial Screening) Phase III (Interim Screening) Phase IV (Final GRR)	1999 2000 2003 2003	.11	.11	(d)		2001 2002 2004 2004	PBC, ITID, WPB, SFWMD USACE, SFWMD USACE, SFWMD USACE, SFWMD
S-155A Structure	2001	\$3.6				2003	USACE, SFWMD
C-17 Flood Study Phase 1 (Model Development) Phase 2 (Application)	2002 2003	\$.154 \$.060	\$.154	\$.154		2002	Northern PBC Improvement District, SFWMD
Cypress Creek/Pal-Mar/ Grove Basin Studies and Plan	2002	TBD				2003	SFWMD

Notes: (a) Local costs are assumed to be the nonfederal funded portions of total costs, including combined SFWMD, local and other government contributions. Local costs are assumed to be 50 percent of total project costs for general planning purposes; (b) PBC = Palm Beach County, ECR = East Coast Regional Water Utility, Jupiter = Town of Jupiter Water Utility, ENCON = Loxahatchee River Environmental Control District, SMWU = South Martin Water Utilities; WCI = Watermark Communities, Inc.; USACE = United States Army Corps of Engineers; (c) L-8 GRR Phase 1 identified the Palm Beach Aggregate site reservoir in the majority of 9 alternatives; (d) Further testing of alternatives involving the reservoir at the Palm Beach Aggregate site is absorbed into "Reservoir Testing Project" under the CERP project management plan; (e) Design and permitting phases only; (f) Pilot project will be 1-2 mgd; (g) 50-100 mgd ultimate facility capacity within indefinite time horizon (h) this phase will proceed only after feasibility is demonstrated.

Although the projects identified in this chapter may substantially affect future water supplies in northern Palm Beach County, they are not included in the cost of this plan because they are funded from other sources. These efforts will be reevaluated in the future and may be incorporated in future revisions of the LECRWSP, as appropriate.

## **Minimum Flows and Levels Rule Development**

This project is underway by SFWMD to develop MFL criteria for the Northwest Fork of the Loxahatchee River and Estuary by 2002. Additional information concerning this activity is described in the “Solution Development” section.

## **Northern Palm Beach County Reclaimed Water Master Plan**

The SFWMD, in cooperation with local utilities and private interests, is conducting a master plan study to determine the capability of conveying reclaimed water from central Palm Beach County to meet current and future demands for irrigation water in northern Palm Beach County and southern Martin County. The Upper East Coast and Lower East Coast Regional water supply plans have concluded that historically used sources of water in these areas are not sufficient to support the projected demands. Existing wastewater utilities in these areas have committed currently available supplies of reclaimed water and projected volumes will not be sufficient to meet the future needs. About 12 mgd of reclaimed water was reused in this area during 1998. Based on discussions with the Seacoast Utility Authority, preliminary estimates developed by the SFWMD indicate projected development based on land use maps in this area will need at least 20 mgd during dry periods and considerably more during drought periods. The study will be completed in the summer of 2002.

The total project cost is estimated at this time to be \$16 million with 50 percent of the cost provided by the federal government. Approximately \$140,000 has been committed to the initial feasibility phase that will result in a master plan. Project cooperators include the SFWMD, East Central Regional Wastewater Control Board, the Loxahatchee River Environmental Control District, the Town of Jupiter, Watermark Communities, Inc., Martin County, South Martin Regional Utilities, and Cogentrix. The SFWMD ultimately assumes responsibility for the primary role of local sponsorship and local cost-share. The SFWMD in cooperation with local partners, will design, permit, and construct the project if proven feasible.

## **L-8 Basin General Re-evaluation Report (GRR)**

In 1968, Congress authorized modifications to the L-8 Project to address additional water needs within the L-8 Basin and surrounding areas, and provide more effective water delivery. The plan included construction of a pump station located near Lake Okeechobee, an operable gate structure capable of acting as a divide structure in the L-8 Borrow Canal and the addition of a new canal (C-300), connecting the existing L-8 Borrow Canal and the existing C-18 West. The projects authorized in 1968 were never constructed; however, the need for additional water and better means of delivery must be addressed, along with the ability to control flooding. Changes in policies and conditions have mandated that the previously completed study be reanalyzed.

The United States Army Corps of Engineers (USACE) has initiated a four-phase planning process that will culminate in a General Re-evaluation Report (GRR) in 2004.

This GRR will integrate a feasibility report level of documentation with an Environmental Impact Statement (EIS) to produce a single decision document. This GRR is being prepared pursuant to USACE regulations to seek modifications of the authorized improvements to the L-8 Basin. It will provide a reformulation and assessment for completing the authorized project in the L-8 Basin.

The GRR covers the L-8 Basin and the following surrounding areas which affect flows through the basin: the Loxahatchee Slough, the Lake Worth Lagoon, Lake Okeechobee, the Grassy Waters Preserve, Water Conservation Area 1 (WCA-1), Stormwater Treatment Area (STA) 1 East, and the C-51 Canal. It is the intent of the GRR to select a plan that will have the operational capability and flexibility to aid in restoration of the ecological integrity of the J.W. Corbett Wildlife Management Area, DuPuis Reserve, Loxahatchee Slough and the Northwest Fork of the Loxahatchee River; reduce impacts to the Lake Worth Lagoon; and improve flood protection in the L-8 Basin.

The first phase of the GRR has been completed and is the result of a cooperative agreement among the SFWMD, Palm Beach County, City of West Palm Beach, and the Indian Trail Improvement District (ITID). The USACE agreed to allow the partners to expedite the Phase 1 portion of the GRR, at a cost to the local partners of approximately \$110,000, to identify existing problems, objectives, and preliminary alternatives to address problems in the L-8 Basin. Nine alternatives were identified based upon various combinations of 26 management measures. These will be further evaluated in Phase 2 and culminate in recommendations on the three best alternatives.

Phase 2 will be funded by the USACE and includes hydraulic and hydrologic modeling of existing conditions and an economic analysis of the nine alternatives identified in Phase 1. This work is scheduled to be completed in Fiscal Year (FY) 2002. Phase 3 will include screening and evaluating of the best three alternatives from Phase 2 and proposal of a "Recommended Plan." Phase 4 will include research and development of the EIS and preparation of the final GRR for Independent Technical Review (ITR) certification. The GRR is scheduled to be completed in 2004 following Phases 3 and 4 and ITR certification. The timeline for the design and construction of the recommended alternative will be determined upon completion of the GRR.

## **S-155A Structure**

The C-51 Canal serves a basin that extends from WCA-1 east to Lake Worth Lagoon in central Palm Beach County. The C-51 Basin includes the cities of West Palm Beach, Lake Clarke Shores, Wellington, Royal Palm and large areas of central Palm Beach County. The C-51 Canal was constructed to remove excess waters and provide flood protection from 1-in-8 year to 1-in-10 year rainfall conditions in the eastern basin, and to provide protection in the west portion of the basin for less than a 1-in-5 year event. Currently, urban and agricultural areas in the western basin are flooded by storms every two to three years.

Major modifications to the western C-51 Canal have been designed and are under construction. Construction of a new water control structure, S-155A which can act as a drainage divide structure, has been recently started. The control elevation in the C-51 Canal west of S-155A will be raised to conserve water resources by preventing overdrainage. Freshwater discharges through the eastern C-51 Canal and S-155 will be reduced, which will improve water quality in Lake Worth Lagoon. Two other major projects, STA 1 East and the pump station (S-319) that discharges runoff into this treatment area from the C-51 Canal Basin, are also under construction.

These modifications will provide improved flood protection and environmental benefit. When all the facilities are constructed and operational, flood elevations and duration in the western C-51 Basin will be significantly reduced and increased storage will be available for water quality improvement and environmental enhancement. Stormwater runoff will be captured and stored for future use.

## **C-17 Basin Flood Control Study**

The C-17 Basin has a drainage area of approximately 33 square miles (21,200 acres) and is located in northeastern Palm Beach County. The canal and its control structure, S-44, were designed to provide flood protection and drainage for the basin and to maintain a groundwater table elevation in the area to prevent saltwater intrusion. In 1955, the USACE completed the General Design Memorandums (GDMs) for the canal and structure. At that time, most of the land was in unimproved pasture or in agricultural production.

Today, the population within the C-17 Basin exceeds 68,000 people. Given the growth that has taken place and the significant changes in land use, from primarily agricultural to predominantly urban, it is appropriate to evaluate the level of flood protection. In recent years, storm events have generated runoff in excess of the original design discharge and urban areas in the C-17 Basin have experienced flooding.

Therefore, a study is underway by the Northern Palm Beach County Improvement District, in partnership with SFWMD, to investigate the existing conditions within the C-17 Basin, including hydraulic facilities and environmental conditions, and to develop hydrological and hydraulic computer models for this basin. The study began in 2000 and will be completed in 2002.

## **Cypress Creek/Pal-Mar and the Groves Basin Study**

Cypress Creek/Pal-Mar and the Groves are two of the seven subbasins in the Loxahatchee River Watershed. These two basins occupy approximately 63 square miles (40,500 acres) in Martin and Palm Beach Counties. Within the two basins, Cypress Creek and Hobe Groves Ditch are major sources of surface water to the Northwest Fork of the Loxahatchee River. The Cypress Creek/Pal-Mar Basin is made up of 86 percent native uplands and wetlands. A little over 10,000 acres of native uplands and wetlands are in public ownership in the Hungry Land Wildlife and Environmental Area. The majority of

runoff from this basin moves through overland flow from west to east then discharges into the Ranch Colony Canal and Cypress Creek. The eastern portion of the basin has been significantly altered to accommodate agricultural and residential land uses. Citrus groves are the predominant land use in the Groves Basin, which is drained by the Hobe Groves Ditch and the Federation Canal.

The SFWMD, Florida Fish and Wildlife Conservation Commission (FWC), Florida Department of Environmental Protection (FDEP), and Martin County have teamed together, using SFWMD funds, to initiate a study of these areas. The following water resource related problems have been identified:

1. Upstream movement of salt water in the Northwest Fork of the Loxahatchee River
2. Sediment loading in Cypress Creek and the Loxahatchee River
3. Flooding in Ranch Colony during severe storms
4. Overdrainage in the Pal-Mar wetlands

A set of models that represent the hydrologic and hydraulic processes in the Cypress Creek/Pal-Mar and the Groves basins will be developed. The models will provide a basis for solutions to the current problems of the area, such as, to optimize wetland management on the Pal-Mar property and to identify and manage discharge volumes from the Groves and from Cypress Creek to the Northwest Fork of the Loxahatchee River.

## PROJECTS INITIATED BY OTHER GOVERNMENT ENTITIES

**Table 6** includes a partial listing of projects and activities within or near the planning area that have been initiated by other agencies or local governments. A number of these projects are being sponsored by The Loxahatchee River Preservation Initiative to receive legislative appropriations for funding in 2002. All of these projects and efforts will need to consider the analyses, conclusions and recommendations in this NPBCCWMP as they move forward. Results of these efforts may also be incorporated into, or considered in, future revisions of the LECRWSP.

### Hungryland Slough

The SFWMD, through the Save Our Rivers Program, owns 1,425 acres in Loxahatchee Slough, located immediately west of the property owned by Palm Beach County, south of C-18 Canal and east of Calusa. A significant hydrologic restoration project is underway on this property to plug old agricultural ditches and allow water to flow east as sheetflow across the county property to the C-18 East Canal. Presently, this water drains north into the west leg of the C-18 Canal. If the water can be moved to the east, more water will be available for storage within the Loxahatchee Slough.

**Table 6.** Northern Palm Beach County Area Projects Primarily Initiated by Other Governmental Agencies.

<b>Project</b>	<b>Year Initiated</b>	<b>Lead Agency and Funding Partners</b>	<b>Estimated Total Project Cost (dollars)</b>
C-18 Culvert Connections to Hungryland Slough (removal and replacement of existing culverts)	FY 02	Palm Beach County, SFWMD	70,000
Central Western Communities Sector Plan	FY 01	Palm Beach County	
Kitching Creek Comprehensive Basin Study*	FY 95	Martin County	NA**
Loxahatchee Slough Hydrologic Model and Master Plan Development*	FY 01	Palm Beach County	NA**
Jonathan Dickinson State Park Water Quality Improvements*	FY 02	Jonathan Dickinson State Park and others	750,000
Jones Creek Restoration*	FY 02	Town of Jupiter	2,000,000
Riverbend Park Hydrologic Restoration*	FY 02	Palm Beach County and SFWMD	750,000
Hell's Canal Hydrologic Restoration*		Jonathan Dickinson State Park (Florida Department of Environmental Protection)	NA**
Jupiter Farms Water Quality Improvements*		South Indian River Water Control District	

\*Projects proposed by the Loxahatchee River Preservation Initiative; \*\* Not Available.

## Riverbend Park

Several years ago the SFWMD purchased the Reese and Gildan properties for inclusion in the Loxahatchee River corridor. Through an agreement with the SFWMD, the Palm Beach County Parks and Recreation Department is managing the properties as part of Riverbend Park. Together, the SFWMD and Palm Beach County are implementing a plan to reestablish and maintain some remnant sloughs that were tributary to the Northwest Fork of the Loxahatchee River. County staff will complete the Riverbend Park slough restoration in FY 2002. In addition, SFWMD staff have completed the installation of three 60-inch diameter culverts with operable gates in the C-18 Canal. These improvements will allow water to be diverted through Riverbend Park to maintain the restored slough system and provide additional flowpaths, increase storage, and increase flows to the Northwest Fork of the Loxahatchee River.

## South Indian River Water Control District (SIRWCD)

In 1989, the SFWMD and the South Indian River Water Control District (SIRWCD) entered into an agreement to share the costs of installation of system improvements to the SIRWCD system not to exceed \$750,000. The improvements involve the installation of a 100-cfs pump at the southern perimeter of SIRWCD lateral canal #7. Lateral canal improvements are planned and are in the design stage.

Construction of the pump station is contingent upon water quality concerns being addressed. A stormwater treatment area (STA)/reservoir may need to be located internal to the SIRWCD system or adjacent to the SIRWCD.

However, lateral canal improvement design is progressing and installation may take place in FY 2003. The lateral canal improvements will allow more water to be held in the SIRWCD system during dry periods.

## SUMMARY

All interests in this area must continue to work together to achieve the goals of this plan and meet the future water supply needs of northern Palm Beach County. The ultimate success of this plan will depend upon the ability to effectively coordinate among federal, state, regional and local efforts in a timely manner to meet the projected future needs of this planning area during the next 20 years. The ability to implement these related projects is especially important because they provide the links and supplemental sources that allow local interests to take full advantage of additional water that is being developed in regional storage through construction of CERP and LECRWSP projects. A list of projects mentioned in this plan and associated timelines are provided in **Figure 5**.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Northern Palm Beach County Comprehensive Water Management Plan - Studies and Projects</b>																					
M Canal Widening																					
G-160 Loxahatchee Slough Structure																					
ASR Wellfield Feasibility and Siting																					
Pilot Study																					
L-8 Pilot Water Storage																					
L-8 Reservoir Testing																					
L-8 (Control 2) Pump Station Diversion - Siting Study																					
Design and Construction																					
G-161 Flow-way Improvements - Planning																					
Design and Construction																					
WPB Wetlands-Based Water Reclamation Project																					
<b>Comprehensive Everglades Restoration Plan - Studies and Projects</b>																					
<b>North Palm Beach County Project - Part 1</b>																					
Project Management Plan for Part 1																					
Project Implementation Report for Part 1																					
Pal Mar & Corbett WMA Hydroperiod Restoration																					
L-8 Basin Modifications																					
C-51 & Southern L-8 Reservoir																					
L-8 Reservoir Testing Project*																					
Lake Worth Lagoon Restoration																					
C-17 Backpumping & Treatment																					
C-51 Backpumping & Treatment																					
<b>North Palm Beach County Project - Part 2</b>																					
Development of the Project Management Plan for Phase 2																					
Project Implementation Report for Phase 2																					
C-51 Regional Groundwater Aquifer Storage & Recovery Wells																					
L-8 Basin Aquifer Storage & Recovery Wells																					
<b>Other Related SFWMD Projects</b>																					
Regional Reuse of Reclaimed Water -- Feasibility/Master Plan																					
Design and Permitting																					
Construction																					
MFL Rule Development-- NW Fork of the Loxahatchee River																					
L-8 GRR - Phase 1 Development of Alternatives (Report)																					
Phase 2 Modeling Initial Screening of Alternatives																					
Phase 3 Interim Screening of Alternatives																					
Phase 4 Final GRR																					
S-155A																					
Cypress Creek/Pal-Mar and the Groves Basin Studies and Plan																					
C-17 Flood Control Study - Phase 1 Model Development																					
Phase 2 Model Application																					

\*The schedule for this project has been accelerated with local funding. Costs will be subsequently reimbursed/credited by CERP

**Figure 5.** Proposed Schedules of Projects Discussed in the Northern Palm Beach County Comprehensive Water Management Plan.